

CLAIMS

What is claimed is:

1. A pipe flange apparatus comprising a first pipe flange having a frontal face surrounding a central bore passing through the flange, the face comprising an internal flange recess extending into the flange and surrounding the bore, and a groove extending into the flange and surrounding the internal flange recess, wherein the internal flange recess comprises a textured surface at least partially surrounding the bore.
2. The apparatus of claim 1 wherein the groove is substantially circular and the internal flange recess is disk shaped, and the diameter of the groove is greater than the diameter of the internal flange recess.
3. The apparatus of claim 2 wherein the flange comprises a plurality of boreholes extending through the flange and positioned radially around the groove.
4. The apparatus of claim 3 wherein the groove has a depth less than that of the internal flange recess.
5. The apparatus of claim 1 further comprising:
an internal flange having first and second portions surrounding a bore extending through the internal flange, wherein the first portion is positioned at least partially within the internal flange recess of the first pipe flange and in contact with the textured surface of the first pipe flange and the second portion extends into the bore; and
a first sealing ring positioned at least partially within the groove surrounding the internal flange recess.
6. The apparatus of claim 5 wherein the first portion of the internal flange is sized and positioned such that it substantially fills all of the internal flange recess but does extend radially outward from the internal flange recess.

7. The apparatus of claim 6 wherein the flange is coupled to a lined pipe having a central liner that is separate from the internal flange, and extends into the central bore of the first extends into the central bore of the first pipe flange such that the liner and the second portion of the internal flange line the central bore of the first pipe flange.
8. The apparatus of claim 5 wherein the internal flange comprises a first surface adjacent to the textured surface, a second surface opposite the first surface, and a groove surrounding the internal flange bore and extending into the internal flange from the second surface.
9. The apparatus of claim 8 further comprising a second sealing ring positioned at least partially within the internal flange groove.
10. The apparatus of claim 8 further comprising:
a second pipe flange coupled to the first pipe flange, the second pipe flange having a frontal face surrounding a bore passing through the second pipe flange, the face of the second pipe flange comprising an internal flange recess extending into the second pipe flange and surrounding the bore of the second pipe flange, wherein the internal flange recess of the second pipe flange comprises a textured surface surrounding the bore of the second pipe flange; and
a second internal flange having first and second portions surrounding a bore extending through the second internal flange, wherein the first portion is positioned at least partially within the internal flange recess of the second pipe flange and in contact with the textured surface of the second pipe flange and the second portion extends into the central bore of the second pipe flange.
11. The apparatus of claim 10 wherein neither the second pipe flange nor the second internal flange has a groove sized and positioned to receive either the first sealing ring or the second sealing ring.